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NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

January 5, 1979

Director of Nuclear Reactor Regulation
U S Nuclear Regulatory Commission
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Containment Purging During Normal Plant Operation

In a letter dated November 29, 1978 from Mr A Schwencer, Chief, Operating Reactors Branch #1, Division of Operating Reactors, USNRC, we were informed of a number of events occurring at other facilities which reduced the effectiveness of automatic isolation of containment purge valves. This letter requested that we respond within 30 days with our plans for dealing with this concern at the Prairie Island Nuclear Generating Plant. Specifically, we were requested to:

- a. Review the design of safety actuation signal circuits which incorporate a manual override feature to ensure that overriding of one safety actuation signal does not also cause the bypass of any other safety actuation signal, that sufficient physical features are provided to facilitate adequate administrative controls, and that the use of each such manual override is annunciated at the system level for every system impacted.
- b. Agree to one of the following courses of action with respect to containment purging:
 1. Agree to cease purging, or
 2. Agree to limit purging to less than 90 hours/year. Provide proof of ability of the containment isolation valves in the purge path to close under postulated accident conditions, or
 3. Provide the basis for continued unlimited purging and a schedule for demonstrating purge isolation valves can close under postulated accident conditions, an evaluation of the impact of purging during operation on ECCS performance, an evaluation of the radiological consequences of any design basis accident requiring containment isolation during purging, and an evaluation of containment purge and isolation instrumentation and control circuit designs.

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Review of Safety Actuation Signal Circuits

All emergency safety features equipment control circuits have been reviewed for manual override features. The results of this review indicated that no individual equipment control circuits contain overrides of any safety actuation inputs other than local/remote selectors. These selectors are provided on certain equipment to provide for shutdown from outside the control room. Selection of local control is individually annunciated in the control room to assure appropriate administrative control.

Safety actuation systems reviewed included Reactor Protection, Safeguards, and Radiation Monitoring. The Safeguards System includes safety injection, containment isolation, containment ventilation isolation, containment spray, feedwater isolation, and main steam isolation functions. Manual override of any of these systems, their subsystems, or individual circuits can only be accomplished by placing the circuitry in the test mode utilizing built-in test circuitry. Test circuit actuation only affects one of the redundant trains or channels within the system; it does not impair operability of its redundant counterpart nor does it affect operation of the other two systems. Test circuit use is annunciated in the control room at least at the individual train or channel level. This facilitates administrative control.

Containment Purging

Three systems are used at Prairie Island for containment venting and purging:

- a. Containment purge system utilizing 36-inch supply and exhaust
- b. Containment inservice purge system utilizing 18-inch supply and exhaust

System (a) is a high volume purge and ventilation system (33,000 cfm) used to ventilate containment following reactor shutdown to permit access for inspection and maintenance. Two containment isolation valves are provided on each supply and exhaust line which receive an automatic closure signal on receipt of a safety injection (SI) or high radiation signal. These valves are of the butterfly type designed to close against calculated peak accident pressure in 3 seconds.

System (b) is a low volume (4,000 cfm) purge system which provides charcoal absorption and particulate filtration of containment air prior to release. This system is used to assist the internal cleanup system in permitting containment access when airborne radioactivity levels preclude entry. It may also be used as a low volume normal purge and vent system. Two containment isolation valves are

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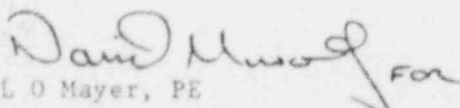
provided on each supply and exhaust line which receive an automatic closure signal on receipt of an SI or high radiation signal. These valves are of the butterfly type designed to close against calculated peak accident pressure in 3 seconds.

A 90 hour/year limitation on operation of either the containment purge system or the containment in-service purge system when the reactor coolant system is above 200°F could severely affect plant availability if more than the average number of containment entries are required for inspection and maintenance. For this reason we have contacted the Westinghouse Electric Corporation with a request for technical assistance to evaluate the impact of purging during operation on ECCS performance. As noted above, the purge valves can, by design, close rapidly under postulated accident conditions. The radiological consequences of an accident occurring during purging are believed to be inconsequential due to the rapid closure of the purge valves. The Prairie Island containment purge and isolation instrumentation and control circuit designs are also believed to be adequate.

If, after discussing the requirements established by the NRC Staff for allowing unlimited purging with Westinghouse, we find the required ECCS analysis is practical, we will provide the Commission with a schedule for submitting the necessary analysis results. This will include confirmation of acceptable radiological consequences and adequate isolation instrumentation and control design. A followup to this letter will be submitted by March 30, 1979 which will address this issue. In the interim, use of the containment purge system and inservice purge system will continue to be minimized consistent with plant inspection and maintenance requirements and prudent plant operating practices.

Please contact us if you have additional questions related to this matter or if our schedule for conforming to your request is not satisfactory.

Yours very truly,



L. O. Mayer, PE
Manager of Nuclear support Services

LOM/DMM/ak

cc: J. G. Keppler
G. Charnoff